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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

re Application of

GREFENSTEIN et al.

Serial No. 08/987,775

Filed: December 9, 1997

For: LAMINATED SHEETS OR FILMS AND MOLDINGS THEREOF

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Art Unit: 1773

Examiner: Kruer

Honorable Comm'r. of Patents  
 PO Box 1450  
 Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR § 1.132

I, Achim Grefenstein, Dr., a citizen of the Federal Republic of Germany and residing at D-67122 Altrip, Germany, declare as follows:

I hold a Ph.D. degree in Mechanical Engineering from the University of Aachen which was awarded in 1994. I am employed by BASF Aktiengesellschaft of 67056

Ludwigshafen, Germany. In total, I have approximately 10 years experience in work relating to thermoplastic molding compositions and films and (co)extrusion thereof.

Therefore, I am familiar with the field to which the subject application relates. I am also familiar with the examiner's rejections of the claims of the subject application.

In the present Declaration, I state the results of Gloss and Scratch Resistant Testing of Laminated Sheets as attached in the Appendix A.

Furthermore, during the course of the experimentation it was found that a top layer of styrene-acrylonitrile co-polymer leads to a high gloss and a high scratch resistance of the laminated sheets or films. This was found by carrying out the following experiment:

The first laminated sheet or film consisted of 950 µm ASA which was colored and 50 µm SAN top layer. A second laminated sheet or film consisted of 750 µm ASA which was colored, an inter layer of 200 µm SAN which was colored with effect colorants, and 50 µm SAN top layer.

These products could be co-extruded to laminated sheets or films at a temperature of 230°C without any problems. The gloss of these laminated sheets or films was significantly higher even than a corresponding laminated sheet or film having a PMMA top layer. The gloss at 20° was 99 for the laminated sheet or film containing the SAN top layer, whereas for a PMMA top layer the value was only 79. For an angle of 60° the gloss was 100 for the SAN top layer and only 87 for the PMMA top layer.

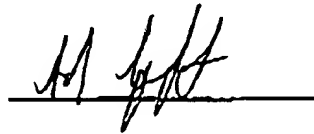
The sheets were tested with the AMTEC-Kistler-test which is usually employed in the automobile industry. This is carried out by treating black test moldings ten times with a brush and an aqueous washing detergent mixture containing 1.5 g/L sand. The gloss was determined before and after the treatment under an angle of 20°. Before the treatment, the gloss for the sheet or film with a SAN top layer was 99, whereas the sheet with a PMMA top layer was only 79. After the treatment according to the AMTEC-Kistler-test the gloss was <sup>32-33</sup>34 for the SAN top layer and only <sup>9-11</sup>9 for the PMMA top



layer.

Thus, the additionally claimed laminated sheets or films containing the SAN top layer show an improved gloss and scratch resistance even when compared with the PMMA top layer. These laminated sheets or films containing the SAN top layer are not disclosed in any of the prior art references. Consequently, we hold the view that the claim directed to these laminated sheets or films is novel and inventive over the prior art references.

Signed at 67056 Ludwigshafen, Germany, this 9<sup>th</sup> day of Sep., 2003

A handwritten signature in black ink, appearing to be 'M. G. H.', is written over a horizontal line.

## Appendix A- Declaration of Dr. Grefenstein Serial No. 08/987,775

| Examples of Red Sheets                         | V1      | V2      | 1       | 2       | 3       | 4        |
|--|---------|---------|---------|---------|---------|----------|
| Top layer 50µm                                 | PMMA    | PMMA    | PMMA    | PMMA    | SAN     | SAN      |
| Middle layer 200µm                             |         | PMMA    |         | PMMA    |         | SAN      |
| Substrate layer 750 to 950µm                   | ABS     | ABS+PC  | ASA     | ASA+PC  | ASA+PC  | ASA + PC |
| Extrusion temperature [°C]                     | 235-250 | 230-255 | 238-258 | 240-260 | 238-257 | 240-255  |
| Starting gloss 20°                             | 79      | 80      | 79      | 80      | 100     | 101      |
| Remaining gloss after car-washplant simulation | 10      | 9       | 11      | 9       | 38      | 39       |
| Colour difference dE after 1500 h              | 10,1    | 6,1     | 2,6     | 2,8     | 2,5     | 2,4      |
| Gloss after weathering 1500 h                  | 69      | 61      | 77      | 76      | 100     | 99       |
| Color difference dE after weathering 3000h     | 12.3    | 8.1     | 4       | 5.2     | 3.8     | 3.9      |
| Gloss after weathering 3000h                   | 71      | 59      | 75      | 75      | 90      | 93       |
| Resistance against pankreatin up to [°C]       | 36      | 38      | 40      | 36      | 69      | 67       |

Gloss measurement according to DIN67530  
 Car-wash plant simulation according to DIN5568  
 Weathering according to iso4892-2, process A

Color difference diffuse 8° according to DIN53236  
Resistance against Pankrealin according to DC-test PBODC 371

|                  | Trade name | Producer      |
|------------------|------------|---------------|
| PMMA top layer   | Lucryl     | Formerly BASF |
| PMMA inter layer | Lucryl     | Formerly BASF |
| San              | Luran      | BASF          |
| ABS              | Terluran   | BASF          |
| ASA              | Luran S    | BASF          |
| ABS+PC           | Bayblend   | Bayer         |
| ASA+PC           | Luran S    | BASF          |

Same results were obtained when the substrate layer contained  $\frac{8}{\text{titania dioxide}}$  % by weight of quartz-fleur.